WHAT IS CLAIMED IS:

1. A variable stiffness optical fiber shaft for use in interventional therapy, comprising:

an optical fiber having a proximal end and a distal end;

a reinforcing tube attached to said optical fiber, said optical fiber extending therethrough;

a reinforcing braid attached over said optical fiber and over a distal portion of said reinforcing tube;

at least one layer of heat shrink material attached over said reinforcing tube, said reinforcing braid, and said optical fiber, to thereby provide a composite shaft with variable stiffness along its length.

2. The variable stiffness optical fiber shaft of Claim 1, further comprising a radiopaque marker attached to said optical fiber.

3. The variable stiffness optical fiber shaft of Claim 1, further comprising a shape memory collar attached over said distal end of said optical fiber.

4. The variable stiffness optical fiber shaft of Claim 3, further comprising a distal sheath connected to said distal end of said optical fiber and extending over a portion of said shape memory collar.

5. The variable stiffness optical fiber shaft of Claim 1, wherein said optical fiber comprises a covering of an outer buffer, and wherein said outer buffer is removed from a distal portion of said optical fiber.

6. The variable stiffness optical fiber shaft of Claim 1, further comprising a connecting hub attached over a proximal portion of said optical fiber.

7. The variable stiffness optical fiber shaft of Claim 6, wherein said

connecting hub is attached over said proximal portion of said optical fiber with adhesive.

8. The variable stiffness optical fiber shaft of Claim 6, further comprising a strain relief member attached over said proximal portion of said optical fiber.

9. The variable stiffness optical fiber shaft of Claim 1, wherein said reinforcing tube has at least one taper ground onto said reinforcing tube along its length.

10. The variable stiffness optical fiber shaft of Claim 1, wherein said reinforcing tube comprises a metal hypo tube bonded to said optical fiber over at least a portion of its length.

11. The variable stiffness optical fiber shaft of Claim 10, wherein said hypo tube is tapered along its length.

12. The variable stiffness optical fiber shaft of Claim 1, further comprising a reinforcing coil attached over said optical fiber and under a distal portion of the reinforcing tube.

13. The variable stiffness optical fiber shaft of Claim 1, further comprising a strain relief member attached over said proximal portion of said optical fiber.

14. The variable stiffness optical fiber shaft of Claim 1, wherein said reinforcing braid is formed of stainless steel.

15. The variable stiffness optical fiber shaft of Claim 2, wherein said radiopaque marker is attached to said distal portion of said optical fiber.

16. The variable stiffness optical fiber shaft of Claim 15, wherein said

radiopaque marker comprises a platinum wire coil.

17. The variable stiffness optical fiber shaft of Claim 3, wherein said shape memory collar is attached over said distal end of said optical fiber by adhesive.

18. The variable stiffness optical fiber shaft of Claim 4, wherein said distal sheath is formed of polyethylene.

19. The variable stiffness optical fiber shaft of Claim 4, wherein said distal sheath is formed from said at least one layer of heat shrink material over said distal end of said optical fiber.

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20. A method of constructing a variable stiffness optical fiber shaft comprising the steps of:

providing an optical fiber, said optical fiber having a proximal end and a distal end;

attaching a reinforcing tube to a proximal portion of said optical fiber, said optical fiber extending through said reinforcing tube;

applying a reinforcing braid over a middle to distal portion of said optical fiber;

shrinking at least one layer of heat shrink material over said reinforcing tube, said reinforcing braid, said radiopaque marker, and said optical fiber, to thereby provide a composite shaft with variable stiffness along its length.

21. The method of Claim 20, further comprising the step of attaching a radiopaque marker to a distal portion of said optical fiber.

22. The method of Claim 20, wherein said step of applying a reinforcing braid comprises disposing a proximal portion of said reinforcing braid over a distal portion of said reinforcing tube.

23. The method of Claim 20, further comprising the step of attaching a shape memory collar over said distal end of said optical fiber.

24. The method of Claim 20, further comprising the step of attaching a distal sheath formed of said heat shrink material over said distal end of said optical fiber, said distal sheath extending over a portion of said shape memory collar.

25. The method of Claim 20, wherein said optical fiber is covered with an outer buffer, and further comprising the step of removing said outer buffer from a distal portion of said optical fiber.

26. The method of Claim 20, further comprising the step of attaching a connecting hub over a proximal portion of said optical fiber.

27. The method of Claim 26, wherein said step of attaching a connecting hub comprises bonding said connecting hub over a proximal portion of said optical fiber with adhesive.

28. The method of Claim 20, further comprising the step of attaching a strain relief member over said proximal portion of said optical fiber.

29. The method of Claim 20, further comprising the step of polishing the proximal end of the optical fiber for connection of said proximal end of the optical fiber to an optical fiber ferrule.

30. The method of Claim 20, wherein said step of attaching a reinforcing tube to said optical fiber comprises providing said reinforcing tube with at least one taper into along its length.

31. The method of Claim 20, further comprising the step of applying a reinforcing coil over said optical fiber.

32. The method of Claim 21, wherein said radiopaque marker comprises a platinum coil.

33. The method of Claim 23, wherein said step of attaching a shape memory collar comprises bonding said shape memory collar to said distal end of said optical fiber with adhesive.

34. The method of Claim 24, wherein said step of attaching a distal sheath comprises attaching a distal sheath formed from a material selected from the group consisting of polyethylene, polytetrafluoroethylene, and polyethylene terephthalate over said distal end of said optical fiber and over a portion of said shape memory collar.

35. The method of Claim 31, wherein said step of applying a reinforcing coil comprises applying said reinforcing coil over a distal portion of said optical fiber and under a distal portion of said reinforcing tube.